APPENDIX B

LIST OF REPORTS, WORKING PAPERS, AND TECHNICAL PAPERS

This appendix contains a selection of documents that were used as references during the preparation of the Environmental Impact Statement for Gary/Chicago International Airport. Executive summaries for the 2001 Master Plan Update, the Railroad Relocation Study, and the Draft Phase III Soil and Groundwater Investigation have been included due to the size of the full documents.

Gary/Chicago Airport Master Plan Update – November 2001 (Executive Summary)
Prepared by HNTB Corporation

Gary/Chicago Airport Railroad Relocation Study – May 9, 2003 (Executive Summary)
Prepared by TranSystems Corporation

Gary/Chicago Airport Archaeological Records Review – November 19, 2003
Prepared by Archaeological Resources Management Service, Ball State University

Draft Phase III Soil and Groundwater Investigation NBD Bank Property Located Within the Runway Extension Zone Northwest of the Gary/Chicago Airport – November 2003 (Executive Summary)
Prepared by Clean World Engineering, Ltd.

MASTER PLAN UPDATE

GARY/CHICAGO AIRPORT

November 2001

GARY/CHICAGO AIRPORT AUTHORITY

HNTB

EXECUTIVE SUMMARY

This Master Plan Update outlines opportunities for improving both the airfield and terminal area facilities in order for the Gary/Chicago Airport (GYY) to meet the aviation and transportation needs for the Northern Indiana area. The intent of this update is to evaluate the Airport's existing facilities, conditions, and activity, project future activity over the 20-year planning period, and recommend methods of accommodating this demand.

ES 1 INVENTORY

Gary/Chicago Airport (GYY) is located in northern Indiana, south of Lake Michigan, in Lake County. The Airport is situated three miles northwest of downtown Gary, Indiana with the City of Chicago located northwest of the Airport. The Airport serves the needs of commercial passengers, general aviation (GA) users, charter passengers, air cargo operators, and other airport tenants.

The airfield configuration consists of two active runways. Runway 12-30 serves as the Airport's primary runway and is 7,000 feet long and 150 feet wide. Runway 2-20 serves as the crosswind runway and measures 3,603 feet long and 100 feet wide.

The landside facilities at Gary/Chicago Airport include a main passenger terminal building, located north of Runway 12-30, and one fixed base operator (FBO), Gary Jet Center, located east of the passenger terminal building. There are also several hangars for both GA and corporate aircraft use, located at the Airport. Aircraft Rescue and Fire Fighting (ARFF), fuel storage, and airport maintenance facilities are also located at the Gary/Chicago Airport.

A single 2-lane roadway provides automobile access to the terminal area from U.S. 12. An 800-space public parking facility is located north of, and adjacent to the terminal building.

The Gary/Chicago Airport lies within Class D airspace which extends out 5 geographic miles from the center of the Airport. The Chicago/O'Hare Airport controls the dominant air traffic control (ATC) facility in the area due to its overlapping Gary/Chicago's airspace.

Gary/Chicago Airport is served by a number of navigational and landing aids designed to aid pilots. The Airport is equipped with an Instrument Landing System (ILS) approach to Runway 30 and Precision Approach Path Indicator (PAPI) lights on all of the runways.

ES 2 AVIATION ACTIVITY FORECASTS

CLARIFICATIONS

The terms "base case" and "low case" are interchangeable within the document and shall have the same meaning when applied to the forecasts and development concepts.

The forecast calendar years 2000 through 2020 shall be interpreted and read as years 0 through 20 with year 0 commencing upon final approval and adoption of the Master Plan.

Aviation activity forecasts are a vital component of developing a logical airport improvement plan. A thorough understanding of historical demands, growth trends, and factors affecting growth is required to develop reasonable projections. This information will be used to determine the recommended development plan for the Airport.

ES 2.1 Socioeconomic Background

The Gary/Chicago service area includes all of Lake and Porter Counties and parts of La Porte, Kankakee, Will, and Cook Counties in Illinois. The City of Gary has a 1997 estimated population of 110,975 with a predicted 0.3 percent average annual growth rate over the next 26 years. Real income at Gary is projected to increase at a 1.4 percent average annual rate through 2025.

ES 2.2 Historical Airport Activity

Historical airport activity is required to accurately determine future facility requirements at the Airport. Annual enplanements at GYY ranged between 1,294 and 3,466 from FY 1991 to FY 1997. There were roughly 60,000 annual operations from 1995 to 1998 with the majority of these being GA operations. There were 82 based aircraft at GYY in 1998. Cargo traffic ranged from 750,000 to 1,500,000 pounds of loaded and unloaded cargo during the past five years.

ES 2.3 Aviation Activity in the Greater Chicago Region

Future developments at Chicago/O'Hare and Chicago Midway Airport were taken into consideration for the analysis of GYY.

Passenger traffic at O'Hare and Midway has increased at a rate of 3.0 percent from 1992 to 1997. Midway has grown at a much faster rate than O'Hare over the past five years. Domestic originating air carrier enplanements are projected to grow at an average annual rate of 2.8 for O'Hare and 4.0 percent at Midway from the present to 2015.

The growth rate for domestic origin & destination (O&D) traffic for Chicago has been fueled by both the growing economy and graduated decline in average airfares. These lower fares increased demand for air travel to and from the Greater Chicago area.

There are 1,381 total arrivals each weekday at O'Hare and Midway combined. Based on this number, a

potential service that GYY could pursue would be to gain access to either or both American's and United's O'Hare hubs with commuter feeder flights.

ES 2.4 Gary/Chicago Forecasts

Three separate cases have been developed for GYY, a base, mid, and high case scenario. The future development of GYY's air traffic depends to some degree on the development of GYY as an airport capable of accommodating the forecast increase in air traffic.

By 2005, total passenger enplanements are projected to range from 57,680 in the base case, depicted in **Table ES.1**, to 1,394,400 in the high case, depicted in **Table ES.3**. In 2010, these numbers jump to 68,175 passenger enplanements in the base case and 1,684,900 in the high case. **Table ES.2** shows the projected enplanements and passenger aircraft operations for the mid case.

Passenger aircraft operations at GYY in 2005 are projected to range from 1,550 in the base case to 38,318 in the high case. **Tables ES.1** to **ES.3** show the projected passenger aircraft operations at GYY for all three cases. Inbound and outbound freight tonnage is projected to range from 1,184 in the base case to 20,475 tons in the high case for the year 2005. The range for the year 2010 is projected at 1,524 to 35,356 tons. **Tables ES.4** to **ES.6** depict the total tonnage forecast for GYY in the base, mid, and high case respectively.

Total general aviation based aircraft is projected to range from 82 in 2000 to 106 in 2020 as depicted in **Table ES.7**. General aviation operations are projected to range from 63,104 in 2000 to 87,874 in 2020. **Table ES.8** shows the projected general aviation operations at GYY. There is just one base case forecast of general aviation based aircraft and operations because these numbers are not based on projected passenger traffic.

ES 2.5 Surface Transportation Activity Forecast

The projected increase in scheduled air passenger service will result in a significant increase in landside transportation activity. This increase in transportation was broken down into four categories based on trip purpose: passenger service, employment, cargo service, and access to GA facilities. All four of these categories are expected to increase due to the projected increase in air traffic at GYY.

ES 3 FACILITY REQUIREMENTS

The next step in the planning process, once the projections of future demand have been developed, is to consider the ability of the airport's existing facilities to accommodate this demand. This section also details the facilities that will be required in order to meet this future demand. These facility requirements were developed for years 1997, 2000, 2005, 2010, and 2020.

ES 3.1 Airfield Capacity and Requirements

Airfield capacity was determined for a base, mid, and high case for the years 1997, 2000, 2005, 2010, and 2020.

TABLE ES.1

GARY/CHICAGO AIRPORT

Projected Passenger Enplanements and Passenger Aircraft Operations
Low Case

Year	Total Passenger Enplanements (a)	Passenger Distribution (b) Air Carrier	Commuter	Average Seats per Aircraft (c) Air Carr	Comm	Average Load Factor (d) Air Carr	Comm	Enplanements per Aircraft Departure Air Carr	Comm	Passenger Aircraft Operations Air Carr	Comm
HISTORICAL											
1997	2,011	2,011	-	124.0		57.9%		71.8		56	
PROJECTED											
2000	48,800	48,800	-	148.0		50.0%		74.0		1,304	
2005	57,680	57,680	-	148.0		50.0%		74.0		1,550	
2010	68,175	68,175	-	148.0		50.0%		74.0		1,832	
2020	95,242	95,242	-	148.0		50.0%		74.0		2,558	

(a) Passenger Enplanements for 2000 based on Pan Am service of 12 weekly departures averaging 75 enplanements per flight plus 2,000 enplanements on 28 Casino Express departures. Growth based on FAA Aerospace Forecasts FY 1999-2010.
(b) Passenger Distribution based on expansion of Pan Am and Casino Express service only, so no commuter enplanements forecast in low case.
(c) Average Seats per Aircraft based on weighted average seating of Pan Am 727 and Casino Express 737-200.
(d) Average Load Factors assumed to be 50% since this is close to breakeven. Lower loads would be unsustainable over long term.

Sources: As noted and HNTB analysis

TABLE ES.2

GARY/CHICAGO AIRPORT

Projected Passenger Enplanements and Passenger Aircraft Operations
Mid Case

Year	Total Passenger Enplanements (c)	Passenger Distribution (d) Air Carrier	Commuter	Average Seats per Aircraft (e) Air Carr	Comm	Average Load Factor (f) Air Carr	Comm	Enplanements per Aircraft Departure Air Carr	Comm	Passenger Aircraft Operations Air Carr	Comm
HISTORICAL											
1997 (a)	2,011	2,011	-	124.0		57.9%		71.8		56	
PRO FORMA											
1997 (b)	378,000	302,400	75,600	142.8	30.5	68.9%	53.6%	98.4	16.3	6,148	9,250
PROJECTED											
2000	413,700	323,700	90,000	140.1	32.9	69.5%	57.2%	97.4	18.8	6,650	9,566
2005	503,280	383,400	119,800	137.9	35.2	69.2%	58.7%	95.4	20.7	8,036	11,596
2010	613,100	461,100	152,000	133.6	40.4	69.2%	60.3%	92.5	24.4	9,976	12,470
2020	825,900	610,700	215,200	128.7	44.0	69.2%	62.0%	89.8	27.3	13,610	15,778

(a) Historical Passenger Enplanements based on FAA TAF Forecast for FY 1997. Historical Passenger Aircraft Operations estimated at 56 of total 160 air carrier operations in 1997.

(b) Pro Forma Total Passenger Enplanements from Table 3.23

(c) Passenger Enplanements assumed to increase at similar rate as domestic scheduled air carrier and commuter carrier rates as provided in FAA Aerospace Forecast FY 1999-2010 and FAA Long Range Aviation Forecast FY 2010, 2015, and 2020.

(d) Passenger Distribution estimated at 80 percent air carrier and 20 percent commuter in 1997 (similar to other airports with 400,000 enplanements and low fare service)

(e) Table 3.26 for air carriers. Table 3.28 for commuters.

(f) Average Load Factor estimated at same levels as domestic operations for air carriers and commuters in FAA Aerospace Forecast FY 1999-2010 and new estimates for 2020.

Sources: As noted and HNTB analysis

TABLE ES.3

GARY/CHICAGO AIRPORT

Projected Passenger Enplanements and Passenger Aircraft Operations
High Case

Year	Total Passenger Enplanements (c)	Passenger Distribution (d		Average Seats per Aircraft (e)		Average Load Factor (f)		Enplanements per Aircraft Departure		Passenger Aircraft Operations	
		Air Carrier	Commuter	Air Carr	Comm	Air Carr	Comm	Air Carr	Comm	Air Carr	Comm
					HISTORICAL						
1997 (a)	2,011	2,011	-	124.0		57.9%		71.8		56	
					PRO FORMA						
1997 (b)	1,081,000	1,005,330	75,670	142.8	30.5	68.9%	53.6%	98.4	16.3	20,436	9,258
					PROJECTED						
2000	1,166,400	1,076,300	90,100	140.1	32.9	69.5%	57.2%	97.4	18.8	22,108	9,576
2005	1,394,400	1,274,500	119,900	137.9	35.2	69.2%	58.7%	95.4	20.7	26,712	11,616
2010	1,684,900	1,532,800	152,100	133.6	40.4	69.2%	60.3%	92.5	24.4	33,160	12,486
2020	2,245,600	2,030,200	215,400	128.7	44.0	69.2%	62.0%	89.8	27.3	45,240	15,792

(a) HISTORICAL PASSENGER ENPLANEMENTS BASED ON FAA TAF FORECAST FOR FY 1997. HISTORICAL PASSENGER AIRCRAFT OPERATIONS ESTIMATED AT 56 OF TOTAL 160 AIR CARRIER OPERATIONS IN 1997.
(b) PRO FORMA TOTAL PASSENGER ENPLANEMENTS FROM TABLE 3.23
(c) PASSENGER ENPLANEMENTS ASSUMED TO INCREASE AT SIMILAR RATE AS DOMESTIC SCHEDULED AIR CARRIER AND COMMUTER CARRIER RATES AS PROVIDED IN FAA AEROSPACE FORECAST FY 1999-2010 AND FAA LONG RANGE AVIATION FORECAST FY 2010, 2015, AND 2020.
(d) PASSENGER DISTRIBUTION ESTIMATED AT 93 PERCENT AIR CARRIER AND 7 PERCENT COMMUTER IN 1997 (SIMILAR TO OTHER AIRPORTS WITH 1,000,000 ENPLANEMENTS AND LOW FARE SERVICE)
(e) TABLE 3.27 FOR AIR CARRIERS. TABLE 3.29 FOR COMMUTERS.
(f) AVERAGE LOAD FACTOR ESTIMATED AT SAME LEVELS AS DOMESTIC OPERATIONS FOR AIR CARRIERS AND COMMUTERS IN FAA AEROSPACE FORECAST FY 1999-2010 AND NEW ESTIMATES FOR 2020.

SOURCES: AS NOTED AND HNTB ANALYSIS

TABLE ES.4

GARY/CHICAGO AIRPORT

Projected Inbound and Outbound Air Freight Tonnage
Low Case

Calendar Year	Current Cargo Base (a)	Passenger Carriers (b)	Integrated Carriers (c)	Total Tons
		HISTORICAL		
1997	500	-	-	500
		PROJECTED		
2000	596	326	-	922
2005	797	388	-	1,184
2010	1,066	458	-	1,524
2020	1,910	640	-	2,549

(a) BASED ON ESTIMATED VOLUME OF 750,000 - 1,500,000 POUNDS FOR RECENT YEARS (PEAK WAS IN 1994) AS PROVIDED BY FBO OPERATOR AT GARY. ANNUAL INCREASE ESTIMATED AT 6 PERCENT (AIR CARGO RTM GROWTH RATE PROJECTED IN FAA AEROSPACE FORECAST FY 1999-2010.

(b) BASED ON OPERATIONS IN TABLE 3.23 AND ESTIMATED 0.25 TONS PER PASSENGER AIR CARRIER OPERATION.

(c) NO INTEGRATED CARRIERS ASSUMED FOR LOW CASE.

SOURCES: AS NOTED AND HNTB ANALYSIS.

Table ES.5

GARY/CHICAGO AIRPORT

Projected Inbound and Outbound Air Freight Tonnage
Mid Case

Calendar Year	Current Cargo Base (a)	Passenger Carriers (b)	Integrated Carriers (c)	Total Tons
		Historical		
1997	500	-	-	500
		Pro Forma		
1997	500	1,537	-	2,037
		Projected		
2000	596	1,663	-	2,258
2005	797	2,009	-	2,806
2010	1,066	2,494	-	3,560
2020	1,910	3,403	-	5,312

(a) Based on estimated volume of 750,000 - 1,500,000 pounds for recent years (peak was in 1994) as provided by FBO operator at Gary. Annual increase estimated at 6 percent (air cargo RTM growth rate projected in FAA Aerospace Forecast FY 1999-2010.

(b) Based on operations in Table 3.24 and estimated 0.25 tons per passenger air carrier operation.

(c) No integrated carriers assumed for mid case.

Sources: As noted and HNTB analysis.

Table ES.6

GARY/CHICAGO AIRPORT

Projected Inbound and Outbound Air Freight Tonnage
High Case

Calendar Year	Current Cargo Base (a)	Passenger Carriers (b)	Integrated Carriers (c)	Total Tons
		Historical		
1997	500	-	-	500
		Pro Forma		
1997	500	5,099	-	5,599
		Projected		
2000	596	5,527	-	6,122
2005	797	6,678	13,000	20,475
2010	1,066	8,290	26,000	35,356
2020	1,910	11,310	39,000	52,220

(a) Based on estimated volume of 750,000 - 1,500,000 pounds for recent years (peak was in 1994) as provided by FBO operator at Gary. Annual increase estimated at 6 percent (air cargo RTM growth rate projected in FAA Aerospace Forecast FY 1999-2010).

(b) Based on operations in Table 3.25 and estimated 0.25 tons per passenger air carrier operation.

(c) Based on one daily weekday roundtrip operation averaging 25 tons per flight in 2005, two daily weekday operations in 2010, and three daily weekday operations in 2020.

Sources: As noted and HNTB analysis.

TABLE ES.7

GARY/CHICAGO AIRPORT

General Aviation Based Aircraft - Historical and Projected

Calendar Year	Single Engine Piston	Multi Engine Piston	Multi Engine Turboprop	Jet	Helicopter	Other	Total
1978	56	13	2		2	2	75
1979	56	14	1				71
1980	47	11	1				59
1981	56	14	1				71
1982	89	23	1			1	114
1983	82	16	1				99
1984	85	22	1		7	1	116
1985	80	22			6		108
1986	71	19	1			1	92
1987	71	18	1		4		94
1988	53	17		1	4		75
1989	62	14		1	3		80
1990	54	15	3	2	2		76
1991	55	15	5	2	2		79
1992	62	13	7	2	2		86
1993	58	11	8	1	3		81
1994	60	13	6	2	3	1	85
1995	55	16	5	2	2	1	81
1996	59	16	7	2	2	1	87
1997	54	13	4	7	4		82
1998	54	13	4	7	4		82
1999	54	13	4	7	4		82
2000	54	13	4	7	4		82
2005	57	13	4	9	4		87
2010	60	13	5	11	4		93
2020	66	14	5	16	5		106

NOTE: 1978-96 DATA BASED ON INDIANA DOT RECORDS AND 1997-99 DATA BASED ON DISCUSSION WITH GYY TOWER.
FORECASTS BASED ON NATIONAL GROWTH RATES FROM FAA AEROSPACE FORECAST FY 1999-2010.

SOURCES: AS NOTED AND HNTB ANALYSIS.

TABLE ES.8

GARY/CHICAGO AIRPORT

Projected General Aviation Operations by Aircraft Type

Calendar Year	Single Engine Piston	Multi Engine Piston	Multi Engine Turboprop	Jet	Helicopter	Total
1997 (A)	41,556	10,004	3,078	5,387	3,078	63,104
2000 (B)	41,556	10,004	3,078	5,387	3,078	63,104
2005 (C)	47,649	10,867	3,344	7,524	3,344	72,728
2010 (D)	49,977	10,828	4,165	9,162	3,332	77,464
2020 (E)	54,714	11,606	4,145	13,264	4,145	87,874

(A) AIRCRAFT OPERATIONS PRORATED BY SIMILAR DISTRIBUTION AS BASED AIRCRAFT DISTRIBUTION, PER GYY TOWER.
(B) OPERATIONS EXPECTED TO REBOUND TO 1997 LEVELS FROM LOWER LEVELS EXPERIENCED IN 1998 AND 1999.
(C) ASSUMED TO INCREASE AT GREATER RATE THAN FAA AEROSPACE FORECASTS: FY 1999-2010 DUE TO CLOSURE OF MEIGS FIELD IN 2002.
(D) ASSUMED TO GROW AT NATIONAL AVERAGE RATE FORECAST IN FAA AEROSPACE FORECAST FY 1999-2010.
(E) ASSUMED TO GROW AT SAME RATE BETWEEN 2010 AND 2020 AS BETWEEN 2005 AND 2010.

SOURCES: AS NOTED AND HNTB ANALYSIS.

Table ES.9 depicts the airfield capacity for both IFR and VFR operations as well as airfield demand for the previously mentioned years. Airport capacity will not be a problem for the Gary/Chicago Airport until the end of the planning period, near 2020.

Table ES.10 shows a summary of the facility requirements for GYY. The base, mid, and high forecasts are shown for the year 2020. This summary addresses the future requirements of the airfield, passenger terminal, air cargo, general aviation, and support facilities. Airfield capacity and delay is also addressed in this summary. Airfield capacity becomes a problem in the mid and high forecasts and thus delays will be incurred without future development.

ES 4 DEVELOPMENT CONCEPTS ANALYSIS

Future airport development and planning concepts were determined based on the forecasts for capacity and demand, and the future long-term goals of the Airport. Five separate concepts were developed for the short, mid, and long-term planning periods. Each of the five concepts has a distinct objective but share some common airport development elements.

ES 4.1 Airfield Development

Various aspects of the Airport's airfield development plan include property acquisition, relocation of railroad tracks, extension of Runway 12, and the relocation of a localizer. Other airfield development plans include standardizing the Runway 30 safety area, an extension of Taxiway A, construction of deicing pads, and improving airside roadways.

ES 4.2 Terminal, Roadway, and Parking Expansion

Terminal expansion plans for the Airport include expanding the existing terminal building and apron area. Roadway access improvements, terminal access road expansions, and parking facility expansions may be necessary for the Airport to meet future aviation demands.

ES 4.3 Other Aviation-Related Facilities and Reserved Land

Other aviation-related future development facilities include the expansion of the maintenance hangar and the expansion of the trade zone apron. Each of the concepts also addresses land that should be reserved for specific airport development needs.

ES 5 ENVIRONMENTAL OVERVIEW

The Environmental Overview section provides an evaluation of the environmental implications based on the proposed development of the Gary/Chicago Airport. Each of the five airport development concepts was evaluated for specific environmental concerns set forth by the Federal Aviation Administration (FAA).

ES 5.1 Specific Environmental Concerns

Various environmental concerns must be addressed before any construction or alteration of the Airport can begin at GYY. Some of the more significant

Table ES.9

GARY/CHICAGO AIRPORT

Hourly Demand vs. Capacity

	1997	2000	2005	2010	2020
Base Forecast					
Demand	35	36	42	44	51
VFR Capacity	104	104	104	104	104
IFR Capacity	61	61	61	61	61
Mid Forecast					
Demand	44	44	51	54	63
VFR Capacity	86	86	86	86	80
IFR Capacity	60	60	60	59	59
High Forecast					
Demand	49	49	58	62	73
VFR Capacity	80	80	75	75	75
IFR Capacity	59	59	59	59	59

Source: FAA Advisory Circular 150/5060-5, Airport Capacity and Delay (with changes), and HNTB analysis.

concerns, with respect to the natural environment, are listed below. Also shown are the environmentally impacted properties on and around GYY.

Natural Environment

Water

- Wetlands
- Navigable Waters
- Water Quality
- Coastal Zone Management
- Floodplains

Air

Land

- Department of Transportation Act, Section 4(f) Lands
- Ivanhoe Nature Preserve

Flora & Fauna

- Biotic Communities
- Endangered Species

Historic, Architectural, Archaeological, and Cultural Resources

Environmentally Impacted Properties

- Conservation Chemical Co., 6499 Industrial Highway
- Oil in Drainage Ditches on Northwest Side of Airport
- Riechmann Enterprises Inc., 7200 Chicago Avenue
- PGT, 7212 Chicago Avenue
- Midco II, located behind 5900 Industrial Highway
- Heckett Co., 5700 Industrial Highway
- Gary Development Corporation Landfill
- Former Nike Missile Silo Area
- Nike Barracks RCRA Closure

ES 6 RECOMMENDED DEVELOPMENT PLAN

The Recommended Development Plan provides the framework for GYY to meet the 20-year (2000-2020) baseline forecast. All functional areas of the Airport are addressed in the Recommended Development Plan. They are the same areas addressed in the Development Concepts Analysis section and include the airfield, terminal facilities, air cargo facilities, aircraft maintenance facilities, general aviation facilities, and support facilities. It is recommended that the Airport adopt Concept 5 for their airport development plan.

ES 6.1 Airfield Plan

The airfield section of the Recommended Development Plan calls for the development of projects that will increase capacity and standardize existing airfield facilities to meet FAA regulations. These projects include: standardizing the Runway 30 Safety Area, extending Runway 12-30 by 1,900 feet, extending Taxiways A, displacing the Runway 30 threshold, and constructing deicing pads. Other projects include constructing high-speed taxiways, constructing airside vehicular roadways, and relocating a localizer for Runway 12-30.

ES 6.2 Passenger Terminal Plan

The Development Plan recommends the expansion of the existing terminal, to nearly double its current size, in the short and mid-term planning horizons (0-10 years). The construction of a new terminal, located on the northwest side of the airfield, is recommended for the long-term planning horizon (10-20 years), to accommodate increasing passenger traffic at the Gary/Chicago Airport.

ES 6.3 Expansion of General Aviation Facilities

In order to meet the growing general aviation demand at the airport, the Development Plan recommends the construction of two new T-hangar buildings and five new corporate aviation buildings.

ES 6.4 Roadway Access and Parking

Surface transportation improvements will be necessary in the mid and long-term planning periods due to the forecast increase in demand at the Airport. Improvements to U.S. 12 and construction of new access roads around the Airport would be required to facilitate increased demand. A new parking garage and long-term public parking lots and rental car facilities would also be required.

ES 6.5 Public Transportation

With the increased passenger traffic at the Airport in the long-term forecast, a new commuter rail station is recommended in a location south of the Airport. The future location of a high-speed rail line at or near the airport will also ease future traffic demands however, the exact location of this line is not yet known.

ES 6.6 Future On-Airport Land Use and Development

To plan for future development beyond the 20-year planning horizon, the base-case development plan recommends the reservation of land for airport support facilities (90 acres), car rental facilities (5 acres), corporate aviation facilities (9 acres), and general aviation facilities (4 acres).

ES 6.7 Surrounding Land Use

Most of the land surrounding the airport is compatible with airport activities and operations. Natural areas surrounding the airport are of great concern and need to be handled with the utmost care.

ES 6.8 Airport Layout Plan

The improvements recommended in the Development Plan of the Master Plan Update have been incorporated into the Airport Layout Plan (ALP) update. The ALP includes the terminal area plans, runway protection profiles, airport property map, and airport access drawing.

ES 6.9 Development Schedule and Costs

The recommended development plan should be completed in separate phases as demand for the additional facilities increases and as funds become available to finance the various projects.

The cost for Gary/Chicago Airport to implement Concept 5 in 2000-year

dollars is approximately $315.8 million. Costs adjusted for inflation total $408.1 million.

ES 7 FINANCIAL ANALYSIS

Nine assumptions were used in developing the cost estimates for implementing Concept 5 at the Airport. These assumptions are detailed in the Financial Analysis chapter of the Master Plan and are reasonable expectations regarding GYY operations and finances.

Airline and tenant rates will be affected by the additional debt service required to finance the airport development program. These impacts on airline rates were determined assuming that rates will be calculated and adjusted semi-annually and a residual ratemaking methodology would be used.

The new rates and charges used to fund the airport development plan have been projected through the year 2020. The year 2000 landing fee at GYY is $.54 per 1,000 pounds. Landing fees at the Airport will increase by less than $.01 per thousand pounds through the planning period. The new terminal rental rate impact averages $17 per square foot from 2005 to 2012, increases to $147 per square foot in 2013, $114 in 2017, and to $197 in 2020[1].

Due to the higher terminal rates at the Airport, it is recommended to develop and implement a marketing effort to obtain additional federal funding, develop a concession program, and decrease the projected costs. These changes will help offset the expenses incurred by the Recommended Development Plan.

[1] Leasing rate is pro forma of matching low passenger forecast with a large terminal size. More realistically, increases in size will be constructed incrementally with passenger growth resulting in lower lease rates.

Gary / Chicago Airport
Railroad Relocation Study

May 9, 2003

TRANSYSTEMS CORPORATION

Executive Summary

The Gary/Chicago Airport currently conducts the majority of its flight operations on Runway 12-30. It also has a crosswind Runway 2-20 available. Runway 12-30 at 7,000 feet is not long enough to accommodate certain aircraft types. Expansion plans for the airport require that this runway be lengthened to accommodate an expected air traffic increase.

The length of Runway 12-30 is limited by the Grand Calumet River and the Indiana Toll Road on the East and the Elgin, Joliet & Eastern Railway (EJ&E) on the west. The presence of the EJ&E Railway disrupts the Federal Aviation Administration (FAA) required Runway Safety Area and Runway Protection Zone mandating use of a displaced threshold which further shortens the effective use of the runway. Extending the western end of Runway 12-30 by relocating the EJ&E Railway is the only practical option available.

TranSystems Corporation was contracted by the Gary/Chicago Airport Authority (GCAA) to study relocation alternatives for the EJ&E Railway. The EJ&E currently operates 8 to 12 trains a day over their line. The route is completely owned, maintained, and dispatched by the EJ&E Railway and their representatives maintain that the only acceptable alternatives will preserve their ability to control their operation (i.e. not subject to other railroad's train movements or dispatching control). This requirement eliminated some potential reroutes of the EJ&E over other railroad facilities. In addition, the Federal Railroad Administration has required that any proposed railroad relocation solution also accommodate the planned Midwest High Speed Rail intercity passenger rail system.

A total of four alternatives were developed that allow the EJ&E varying levels of control over their operations. These alternatives were developed and reviewed in cooperation with the EJ&E Railway, Amtrak, CSX Transportation, Norfolk Southern Railway (NS), Indiana Harbor Belt Railroad (IHB), and the Northern Indiana Commuter Transportation District (NICTD) (owners of the South Shore commuter line). Community and business stakeholders throughout the area were contacted and input solicited in development of the various routing alternatives.

Alternative 1 ($14.5 million) utilized a "balloon" loop around the end of the proposed runway extension. Alternative 2 ($26.5 million) utilized a reroute along the South Shore line and a connection to the existing EJ&E beyond the north end Runway 2-20. Alternative 3 ($40.2 million) utilized the same concept only paralleling the unused IHB Railroad line instead of the South Shore. Alternative 4 ($138-$178 million) utilized a tunnel under the airfield along the existing alignment.

Alternative 1 could be considered a shorter range solution as it may interfere with other airport expansion plans. Alternative 2 requires use of Gary Sanitary District (GSD) property which was originally deemed acceptable by the GSD, but later rejected due to new GSD expansion plans. Alternative 3 was favored by the Four City Consortium,

supporters of a plan to consolidate railroad operations in the area onto the unused IHB line. It was rejected by the EJ&E Railway due to concerns over extended transit time and additional grade crossings. Alternative 4 was rejected by GCAA for cost and environmental concerns.

Two additional alternatives were developed late in the project. Alternative 5 envisioned a consolidated tunnel accommodating EJ&E freight trains as well as South Shore commuter trains and future high-speed passenger trains. Alternative 5 provides for development of a multi-modal transportation terminal at the airport which allows the project to become eligible for multiple funding opportunities. This will reduce the airport contribution to the original Alternative 4 tunnel plan, although the original environmental concerns remain. Cost and environmental issues precluded use of this alternative.

A modified Alternative 2 was designed to avoid the GSD property but possibly requiring the closure of Clark Road north of the airport property. Alternative 2 was acceptable to the EJ&E Railway as well as the Gary/Chicago Airport Authority.

A phased approach using either Alternative 1 or Alternative 2 was then developed that allows for future development of the multi-modal transportation center without the requirement for a full tunnel build-out in the initial railroad line relocation. This plan was also accepted by the Gary/Chicago Airport Authority. These alternatives will now be carried into the airport expansion Environmental Impact Statement for further analysis.

Comparing the remaining alternatives we find:

- Alternative 1 is less costly and involves a shorter construction window impacting rail operations. At $14.5 million, it is nearly $12 million less than Alternative 2. Alternative 1 is also endorsed by the US Fish & Wildlife Association and the Indiana Department of Natural Resources. The rail alignment of Alternative 1 does not involve any residential relocation but does add two new grade crossings at busy State Route 312 and US 12. Alternative 1 could impact future airport expansion opportunities but the other alternatives studied may still be available at that time.

- Alternative 2 can be considered a "permanent" solution as it completely eliminates the EJ&E from any reasonable airport expansion area. It increases the EJ&E operating costs due to its length and speed restrictive curvature. At a capital cost of $26.5 million it is almost double Alternative 1. It does require the removal of a number of residences near Clark Road (many of which may be moved anyway under runway safety improvements) and adds three new grade crossings at Durbin Street (which is currently being considered for closure) and Clark Road twice. Future changes in railroad operating ownerships and routings could render this relocation unnecessary.

Therefore the project team recommends that the Gary/Chicago Airport Authority proceed with Alternative 1.

Gary/Chicago Airport

Lake County, Indiana

Archaeological Records Review

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November 19, 2003

ARMS Project # 03RC026

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Introduction

In response to a request from Aerofinity of Indianapolis, Indiana, an archaeological records review has been completed for the proposed Gary/Chicago Airport Expansion Project, located in Calumet Township, Lake County, Indiana (Figure 1). The proposed project is located in portions of Sections 26, Township 37 North, Range 9 West as shown on the USGS 7.5' Whiting, Indiana, Quadrangle; portions of Sections 1, 26, 35 and 36, Township 37 North, Range 9 West as shown on the USGS 7.5' Highland, Indiana, Quadrangle; and portions of Sections 6 and 31, Township 37 North, Range 8 West as shown on the USGS 7.5' Highland, Indiana, Quadrangle (Figure 2). The proposed project involves expansion and associated improvements to the existing airport.

Land within the project area is presently active and/or abandoned industrial and residential property, existing railroads and roadways (including a portion of Interstate 90) and the disturbed runway clear zones. The Grand Calumet River flows through the southern portion of the project area.

The records check used site records, maps and materials on file at the Archaeological Resources Management Service and the Department of Natural Resources, Division of Historic Preservation and Archaeology to locate, identify and evaluate the known and expected archaeological resources within the project area. The records search was conducted to evaluate the potential impact of the project upon archaeological resources.

Physiographic Setting and Historical Background

Setting

The project area is within the general physiographic unit known as the Lake Michigan Border of the Northern Moraine and Lake Region (Gray 2000). Surface deposits in the area are within the Lacustrine member of the Atherton Formation (Wayne 1966: 26) and are located in the bedrock physiographic unit known as the Rensselaer Plateau (Schneider 1966: 54). There are no recorded chert sources close to the project area, but gravel cherts would have been available (Cantin 1994: 14). The topography of Lake County is marshland (agricultural usage with drainage efforts) in the south, rolling prairie in the central portion, and sand ridges/hills/marshes in the north adjacent to Lake Michigan (Ralston 1996: xv). The project area is in the Little/Grand Calumet River watershed, as shown on the Indiana Department of Natural Resources Hydrologic Basins map.

The project is in the Oakville-Tawas soil association which contains excessively to very poorly drained, steep to nearly level and depressional soils that are coarse-textured and formed in organic materials. (Persinger 1972: General Soils Map). Specific soils in the project area are included in Table 1 (Persinger 1972: Map Sheet #6, 20, 26, 34, 36). The project is located in the dune, beach ridge, and shoreline environmental zone (Schneider 1970).

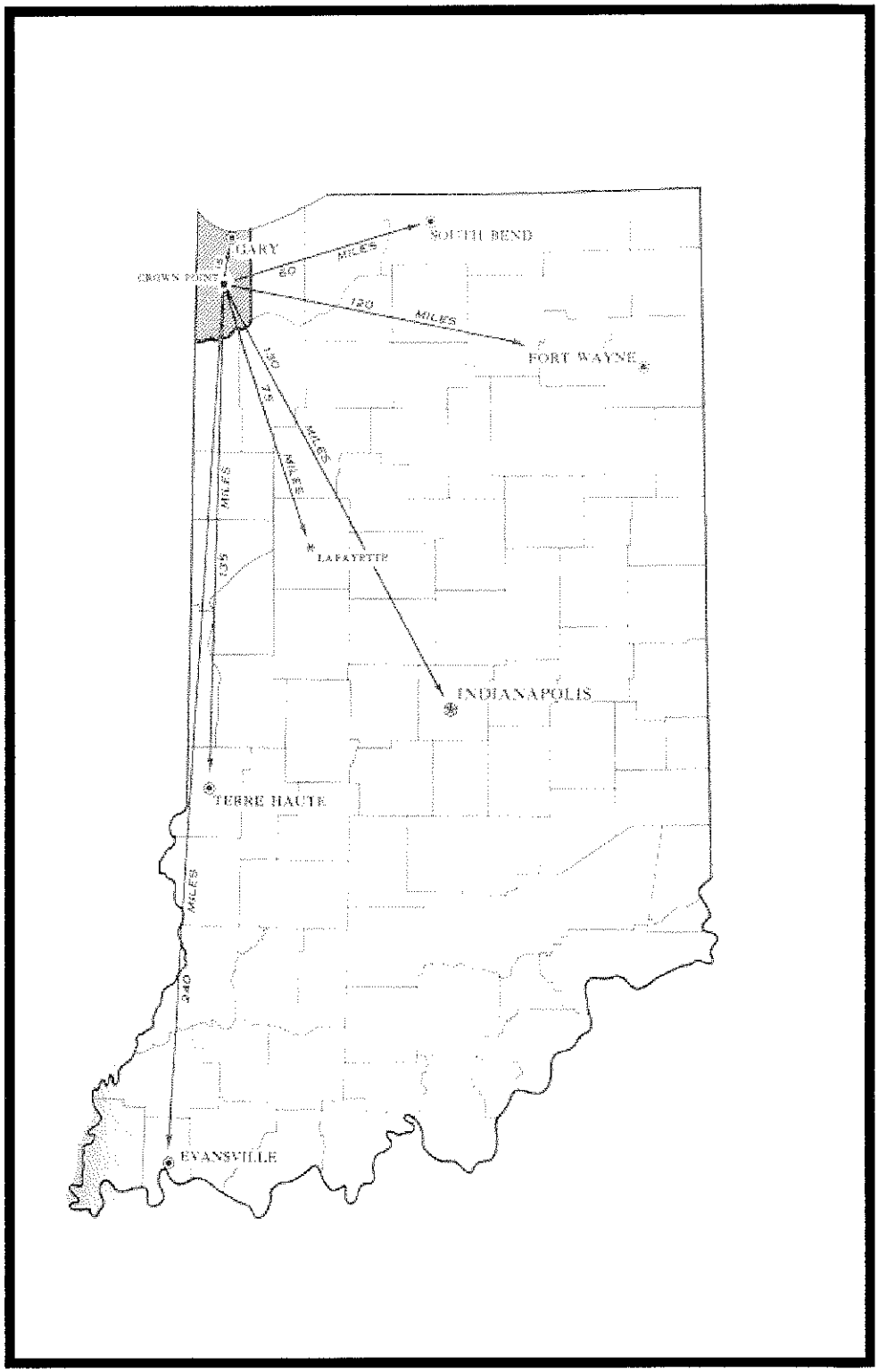

Figure 1. Location of Lake County within the State.

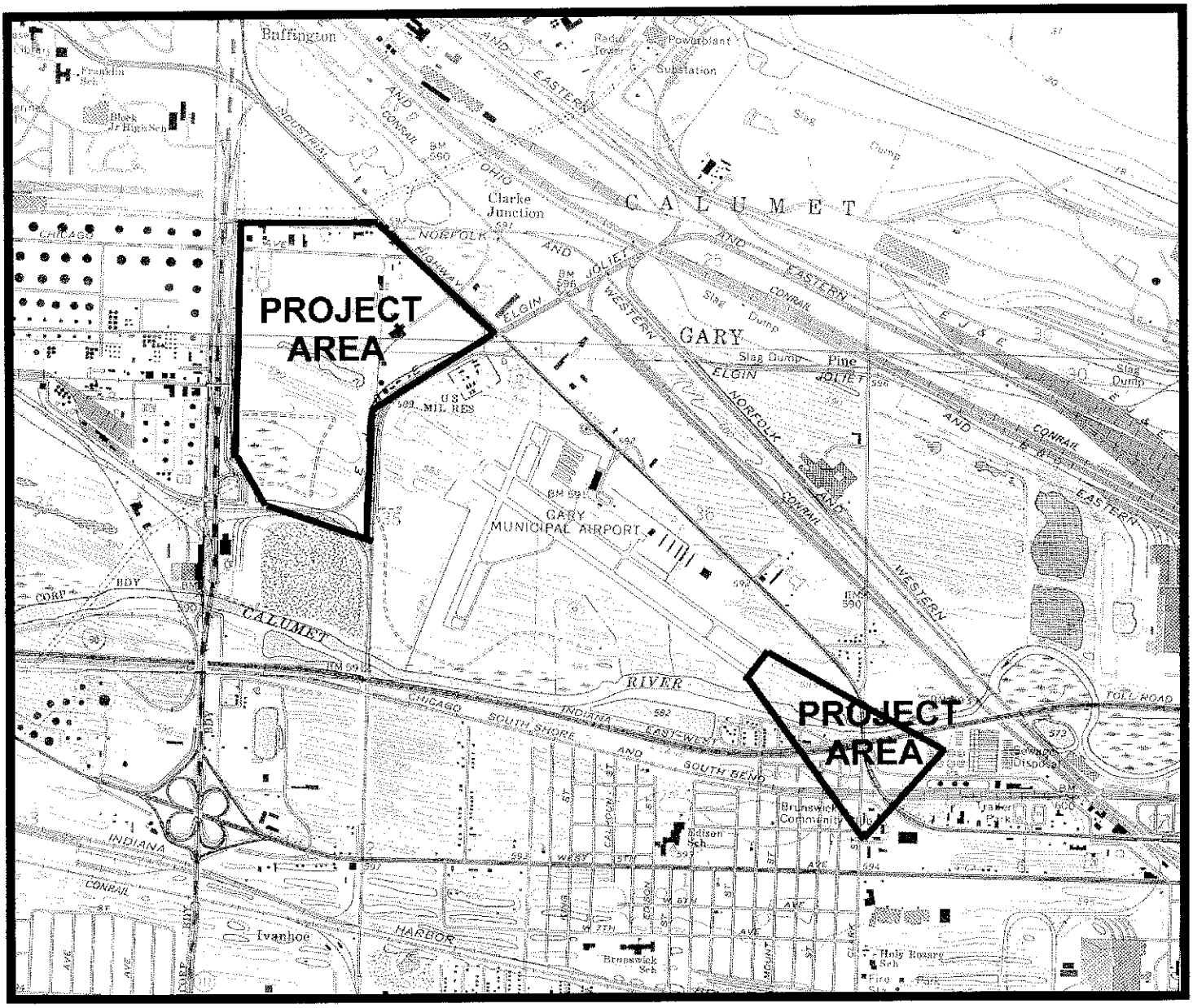

Figure 2. Portions of the USGS 7.5' Highland and Whiting, Indiana, Quadrangles showing the project areas.

Table 1: Soils within the project area (Persinger 1972: Map Sheet #6; pp. 20, 26, 34, 36)

Mh -- Marsh	Soils occupy shallow lakes/ponds that usually remain wet all year, growing water-tolerant plants and suited for wildlife (p. 20).
OkB – Oakville-Tawas	0-6% slopes; poorly to excessively drained soils that formed in organic materials and sandy mineral soil materials, consisting of about 45% sand and 45% Tawas muck, and remaining 10% of fine to loamy sand (p. 26).
Ta – Tawas Muck	Small areas of muck overlying clays, silts, sandy loam, or marl; high water table is limitation (p.34).
Ur – Urban Land	Areas that have been filled with earth, cinders, basic slag, trash, or any combination of these, then smoothed over. Original soil can no longer be identified (p. 36).

The presettlement vegetation of the area was predominantly oak-hickory forest (Petty and Jackson 1966:280). Climate, the main determinate of plant and animal life, has varied in Lake County since the retreat of the glaciers from Indiana about 12,000 years ago. The climate is currently characterized by wide variations in temperature throughout the year, influenced in part by prevailing winds from Lake Michigan (Persinger 1972: 85).

Background

Information on file at the Archaeological Resources Management Service and The Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology shows that at least 513 archaeological sites have been recorded in Lake County. One site is recorded within the project area (Figure 3). Site 12-La-64 was located south of Runway 12-30 and consisted of buried human remains and associated artifacts. The site was discovered during the construction of the South Shore Railroad. The site was investigated by Charles Faulkner and contained a grit tempered ceramic vessel and a stone pipe. The only part of the burial that was saved was a mandible. No mention is made on the site form about the disposition of the remaining skeletal material. The artifacts were reported to be in the collection of a Mr. Phil Dickey. No other sites are recorded within one mile of the proposed project areas. Our records show that the area under consideration has not been covered by an archaeological reconnaissance.

Sites representing the known prehistoric culture history of Indiana are on record from the region (Kellar 1983, Swartz 1981). As currently defined, a prehistoric culture history for Indiana is presented in Table 2. The material remains in Table 2 are generalized and vary from region to region within Indiana. Settlement, economic and ideologic systems also vary by cultural unit.

Historically, Lake County was first explored by Father Jacques Marquette in 1675. Lake County was officially settled in 1837 after treaties with the Potawatomi Indians in 1828 and 1832. Public land sales began in 1839, but earlier settlers were already known to be living in the area in 1834 (Ralston 1996: xv). Neither Guernsey (1932) nor The General Land Office records for Lake County show any sites, structures, or other cultural resources near or within the project area. The map of Lake County in Maps of Indiana counties in 1876 (Anonymous 1968) shows the northwest portion of the community of Clarke around the project area. A search of DHPA records for known historic cemeteries within the project area revealed none. A review of the Indiana Historic Sites and Structures Inventory (Ralston 1996: 120-121) for Lake County shows forty-four historic structures in the Gary-Brunswick area of Calumet Township. One historic structure is located within the portion of the project area south of Runway 12-30 and could be impacted by the project. This structure is rated "C" by Historic Landmarks Foundation of Indiana, which is "contributing properties which meet basic inventory criterion of being pre-1945, and are important to the continuity of the area's historic fabric but alone would not qualify to be listed in the National Register of Historic Places" (Ralston 1996: x-xi). Located in northwest Gary within the community of Brunswick, this is structure #19991, a house at 143 Porter Street, an example of Colonial Revival architecture c.1935 (Ralston 1996: 120-121). Other historic structures in close proximity to the project area are site#19995, a house at 325 Matthews Street, an example of gable-front vernacular/architecture c.1930 and #19996, a house at 348 Matthews Street, an example of bungalow architecture c. 1930. Gary-Brunswick is not considered a historic district, but represents a residential area of the mid-twentieth century during Gary's thriving

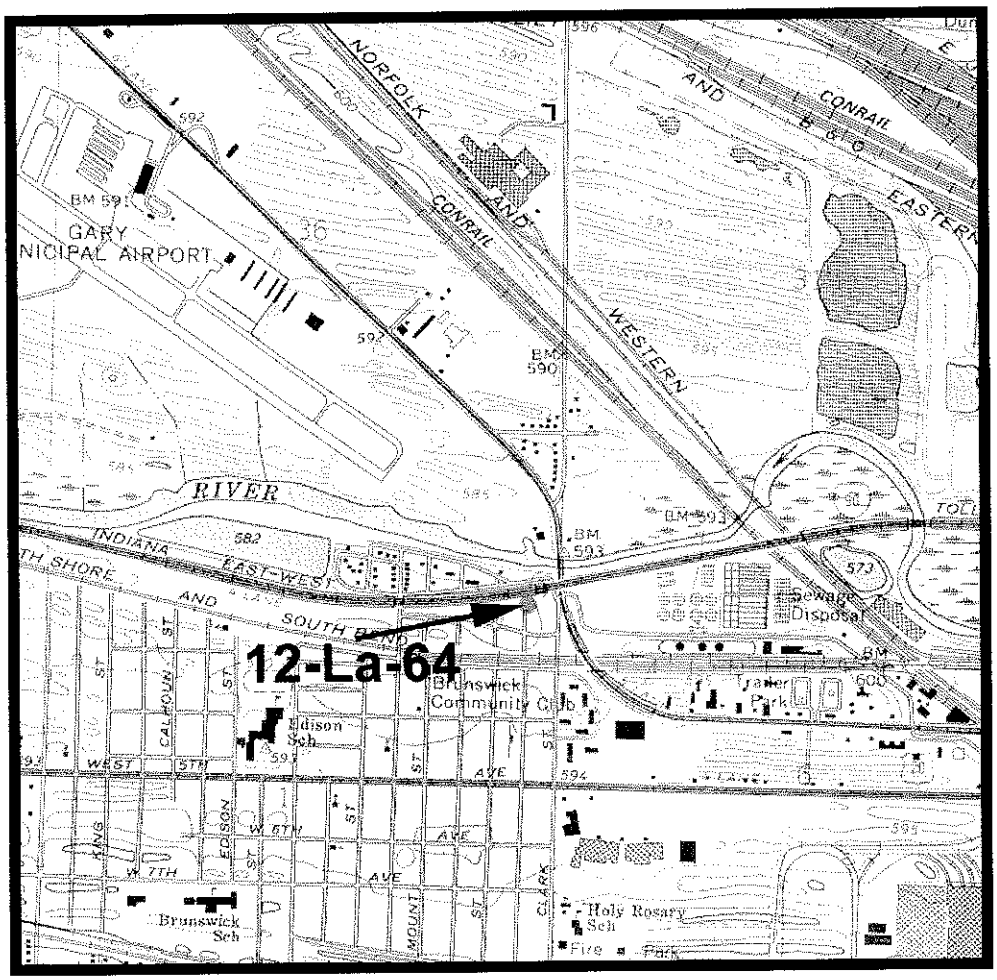

Figure 3. Portions of the USGS 7.5' Highland and Whiting, Indiana, Quadrangles showing the location of site 12-La-64.

Table 2*
Culture History of Indiana

Chronology	Period	Archaeological Unit	Points	Ceramics
AD 1000 - 1650	Late Prehistory	Caborn-Welborn Oneota Angel Vincennes Prather Western Basin Ft. Ancient Oliver Yankeetown	Triangular Cluster	Caborn-Welborn Fisher-Huber Angel Vincennes Western Basin Ft. Ancient Oliver Yankeetown
AD 600 - 1200	Late Woodland	Albee Newtown Intrusive Mound Allison-LaMotte	Triangular Cluster Jack's Reef Corner-Notched Racoon Side Notched Steuben Chesser Lowe	Langford Western Basin Albee Newtown Jack's Reef Allison-LaMotte
200 BC - AD 600	Middle Woodland	Allison-LaMotte Havanna Scioto Mann Adena	Steuben Chesser Lowe Baker's Creek Snyders Robbins	Allison-LaMotte Havanna Morton Goodall Scioto Mann Late Crab Orchard McGraw Adena Plain New Castle Incised
1,000 - 200 BC	Early Woodland	Crab Orchard Marion	Robbins Adena Cresap Meadowood Kramer Dickson Gary Motley Cypres	Crab Orchard Marion Thick Fayette Thick

Table 2(cont.) Culture History of Indiana				
Chronology	Period	Archaeological Unit	Points	Ceramics
3,000 - 1,000 BC	Late Archaic	Shell mound Riverton Glacial Kame Red Ochre Bluegrass Maple Creek French Lick	Turkey-tail Riverton Brewerton Table Rock Lamoka Karnak McWhinney Late Archaic Stemmed Matanzas	
6,000 - 3,000 BC	Middle Archaic		Matanzas Karnak Stanley Godar Raddatz	
8,000 - 6,000 BC	Early Archaic	Jerger Bifurcate Kirk Thebes	Kanawha LeCroy St. Albans MacCorkle Palmer Kirk Decatur Thebes St. Charles Charleston Lost Lake Big Sandy	
8,000 - 8,500 BC	Late Paleoindian		Dalton Plainview Holcombe Quad Hi-Lo Agate Basin	
10,000 - 8,000 BC	Early Paleoindian	Clovis	Cumberland Clovis	
*Table created in 2001 from the following sources: DHPA 1999, Lewis 1996, Fagan 1991, Justice 1987, Kellar 1983, and Swartz 1981.				

industrial economic expansion (Ralston 1996: 121).

Within the project area south of Runway 12-30 are portions of the Indiana East-West Toll Road, Interstate 90, and U.S. Route 12, the Chicago South Shore and South Bend Railway Line, and a segment of the Grand Calumet River. Within the area north of Runway 12-30 is abandon industrial property, Norfolk and Western, and Elgin, Joliet and Eastern rail lines, as well as a portion of Chicago Avenue of East Chicago.

Conclusions and Recommendations

Given that the land within the proposed project area has been extensively disturbed by industrial, railroad, and urban usage the likelihood of intact archaeological deposits is unlikely. The burial reported in a portion of the project area south of runway 12-30 appears from documentation to have been removed when the South Shore Railroad was constructed. Additional disturbance to that portion of the project area by the construction of Interstate 90, a sewage disposal plant and residential development has, in all likelihood, destroyed any archaeological deposits located near the burial. It is therefore our recommendation that the project be allowed to proceed without additional archaeological assessment. If artifact concentrations, archaeological features or burials are encountered during construction, the project must be halted and the archaeologist in the Division of Historic Preservation and Archaeology of the Department of Natural Resources contacted for an evaluation before the project resumes.

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DRAFT PHASE III SOIL AND GROUNDWATER INVESTIGATION
NBD BANK PROPERTY LOCATED WITHIN THE RUNWAY EXTENSION ZONE NORTHWEST OF THE GARY/CHICAGO AIRPORT
GARY, INDIANA

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NOVEMBER 2003

CWE PROJECT NO. A062-806

EXECUTIVE SUMMARY

Aerofinity, Inc. was retained by the Gary/Chicago Airport Authority to conduct the public scoping of the environmental process for improvements proposed at the Gary/Chicago Airport in Gary, Indiana. As identified in the Memorandum of Understanding (MOU) between the Federal Aviation Administration (FAA) and the Gary/Chicago Airport Authority, executed in May 2001, and hereinafter referred to as the "May 2001 MOU", these improvement projects include, but are not limited to, an extension of Runway 12-30, taxiway construction, terminal expansion, and eventual construction of a new terminal, cargo area construction, railroad relocation, access road construction, and other related items. Clean World Engineering, Ltd. (CWE) conducted a Phase I Environmental Site Assessment (ESA) of the properties, which may be impacted by the above referenced improvements to the Gary/Chicago Airport. The findings of the Phase I ESA were presented in the *Draft Phase I Environmental Site Assessment of Properties Located within the Runway Extension Zone Northwest of Gary/Chicago Airport, Gary, Indiana,* dated October 2002.

Specifically, the Phase I ESA revealed recognized environmental conditions (RECs) in connection with the NBD Property (hereinafter referred to as "Site"), located at 7201 Chicago Avenue and 5510 and 4900 Morse Streets (a 122-acre vacant land east of Cline Avenue and north of Gary Avenue). It was subsequently recommended that a Phase II ESA be conducted at the Site. Aerofinity authorized CWE to proceed with the Phase II ESA. In order to conduct the Phase II investigation, Site access was required. Access was granted by NBD Bank for the Site.

The three parcels that comprise the Site are bounded to the north by Amerigas Propane LP (former gas distribution terminal) and Beemsterboer Slag Ballast Company (former slag crushing plant), followed by Chicago Avenue; to the south by EJ&E Railroad followed by Gary Avenue; to the east by Conservation Chemical Company (a former chemical recycling facility) and the EJ&E Railroad followed by the Gary/Chicago

Airport; and to the west by Cline Avenue. Western Scrap Corporation, an auto salvage yard is located northeast of the Site.

The Site is currently owned by NBD Bank. The Site property was previously owned by City Services Oil Company, and has never been developed. The Phase I ESA for the property, conducted by CWE in September 2002, identified some RECs. The property was suspected to have received tank bottoms/oil sludge in the past from unknown sources. Various attempts were made by the present owner to aerate these materials in the soil employing land-farming techniques. The soil and groundwater at the Site also had the potential to have been impacted by the adjoining Conservation Chemical Company property.

The Phase II ESA was conducted in October 2002, to confirm the presence or absence of contamination and to provide a subsurface assessment of the subject property for RECs identified in the Phase I ESA including:

- Impact on soil and groundwater at the Site as a result of suspected tank bottoms dumped on the ground surface.
- Potential impact on the soil and groundwater at the Site by the former usage of the adjoining Conservation Chemical Company property.

The Phase II ESA was performed in accordance with American Society for Testing and Materials (ASTM) guidelines (E1903-97) and Indiana Department of Environmental Management (IDEM) Risk Integrated System of Closure (RISC) technical guidelines for soil screening procedures.

During the October 2002 investigation, eight soil borings (SB-1 through SB-8) were installed using a hollow stem auger until groundwater was encountered. Continuous sampling was performed at 2-foot intervals with a split-spoon sampler. Surface and subsurface samples were collected from the eight boreholes for laboratory analyses, in addition to groundwater samples.

Eight surface soil samples (SB-1-S through SB-8-S) were analyzed for volatile organic compounds (VOC) using U.S. Environmental Protection Agency (EPA) Method 5035/8260B, semi-volatile organic compounds (SVOC) using U.S. EPA Method SW 8270C, polychlorinated biphenyls (PCB) using U.S. EPA Method SW 8082, and total Resource Conservation and Recovery Act (RCRA) metals using U.S. EPA Methods SW 6010B and 7471A.

Eight Subsurface soil samples (SB-1-SS through SB-8-SS) were analyzed for VOCs, SVOCs, PCBs, and RCRA Toxicity Characteristic Leaching Procedure (TCLP) metals (U.S. EPA Methods SW 1311/6010B/7440A).

Soil sample analytical results were compared against the IDEM RISC guidelines for industrial land use. Specifically, surface soils sampling analytical results were compared against direct contact closure levels. The subsurface soils sampling analytical results were compared against the migration to groundwater closure levels.

Eight groundwater samples (SB-1-W through SB-8-W) were analyzed for VOCs using U.S. EPA Method 5035/8260B, SVOCs using U.S. EPA Method SW 8270C, PCBs using U.S. EPA Method SW 8082, and total RCRA metals using U.S. EPA Methods SW 6010B and 7471A.

Groundwater sample analytical results were compared against the IDEM RISC guidelines for industrial land use. For chemical constituents in groundwater samples for borings installed at the boundary of the property or throughout the plume, IDEM recommends that the groundwater closure levels for residential land use be used. Hence, groundwater analytical results were also compared against the IDEM RISC groundwater closure levels for residential land use, in addition to the Risk Based Screening Levels, the Maximum Contaminant Levels (MCL)/U.S. EPA Region 9 Preliminary Remediation Goals (PRG), which were adopted in the U.S. EPA Region 5 Model Quality Assessment Project Plan.

Based on the soil and groundwater sample results in the *Draft Phase II Environmental Site Assessment, NBD Bank Property Located Within the Runway Extension Zone Northwest of Gary/Chicago Airport, Gary, Indiana*, dated February 2003, the following conclusions and recommendations were made about Site conditions.

- Laboratory results confirmed that surfacial soil is contaminated. The PNA benzo(a)pyrene in surface soil samples SB-1-S and SB-4-S were detected above the IDEM RISC closure levels for industrial land use.
- The groundwater contamination from RCRA metals and benzene (SB-8) has been confirmed to exist at concentrations in excess of the IDEM RISC groundwater closure levels for residential land use.
- The presence of contaminants in the groundwater samples at the southern boundary of the Site and the assumed groundwater flow in the southern direction towards the Grand Calumet River indicated possible off-site migration of contaminants.

In October 2003, CWE conducted a Phase III subsurface investigation at the Site to determine the extent of groundwater contamination, and assist in the development of a Remedial Action Plan.

During the October 2003 investigation, 16 soil borings (SB-9 to SB-24) were installed using a direct push probe until groundwater was encountered. Continuous sampling was performed at 3-foot intervals. Surface samples from the eight boreholes (SB-9 to SB-16) and subsurface samples from 16 boreholes (SB-9 to SB-24) were collected for laboratory analyses, in addition to groundwater samples.

Surface soil samples were analyzed for VOCs using U.S. EPA Method 5035/8260B, and Polynuclear Aromatic Hydrocabons (PNAs) using U.S. EPA Method SW 8310.

Subsurface soil samples were analyzed for VOCs, PNAs and total RCRA metals using U.S. EPA Methods SW 6010B and 7471A.

Soil sample analytical results were compared against the IDEM RISC guidelines for industrial land use. Specifically, surface soils sampling analytical results were compared against direct contact closure levels. The subsurface soils sampling analytical results were compared against the migration to groundwater closure levels.

For the eight surface soil samples (SB-9-S through SB-16-S) analyzed, the VOC concentrations detected above the laboratory-reporting limits were below the IDEM RISC industrial-direct contact level.

The benzene concentrations for subsurface samples SB-9-SS and SB-10-SS exceeded the RISC migration to groundwater closure levels for industrial land use.

Other VOCs in subsurface soil samples detected above the reporting limits were below the IDEM RISC industrial closure levels.

The PNAs benzo(a)pyrene in surface soil sample SB-9-S, and benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3cd)pyrene in surface soil sample SB-10-S were detected above the IDEM RISC industrial direct contact level.

Chrysene in subsurface soil sample SB-10-SS was detected above the IDEM RISC groundwater closure levels for industrial land use.

Other PNA compounds in surface and subsurface soil samples detected above the reporting limits were below the IDEM RISC industrial closure levels.

The RCRA metal lead in subsurface soil sample SB-9-SS and SB-10-SS; and arsenic in subsurface soil samples SB-17-SS and SB-19-SS were detected above the IDEM RISC industrial migration to groundwater level.

Other RCRA metals in subsurface soil samples detected above the reporting limits were below the IDEM RISC industrial closure levels.

CWE collected a single groundwater sample from each of the 16 soil borings (SB-9 through SB-24) for laboratory analyses. Groundwater samples were analyzed for VOCs using U.S. EPA Method 5035/8260B, PNAs using U.S. EPA Method SW 8310, and total RCRA metals using U.S. EPA Methods SW 6010B and 7471A.

Groundwater analytical results were compared against the IDEM RISC guidelines groundwater closure levels for residential and industrial land use.

The VOC benzene in groundwater samples SB-9-W and SB-10-W was detected above the IDEM RISC groundwater closure levels for residential and industrial land use. Other VOCs in groundwater samples detected above the laboratory-reporting limits were all below the IDEM RISC groundwater closure level for residential land use.

The PNA indeno(1,2,3cd)pyrene in groundwater sample SB-9-W; and benzo(a)anthracene in groundwater samples SB-10-W and SB-11-W were detected above the IDEM RISC closure levels for residential and industrial land use. The PNAs benzo(k)fluoranthene in groundwater sample SB-9-W and benzo(a)pyrene in groundwater sample SB-10-W were detected above the IDEM RISC closure level for residential land use.

Other PNAs in groundwater samples detected above the laboratory-reporting limits were all below the IDEM RISC groundwater closure level for residential land use.

The RCRA metals arsenic in groundwater samples SB-9-W through SB-11-W, SB-13-W, SB-14-W, SB-17-W, SB-21-W, SB-22-W and SB-24-W; and lead in groundwater samples SB-9-W, SB-10-W and SB-13-W were detected above IDEM RISC closure levels for residential and industrial land use.

Other RCRA metals in groundwater samples detected above the laboratory-reporting limits were all below the IDEM RISC groundwater closure level for residential land use.

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